

In re Patent Application of
RAYNOR
Serial No. Not Yet Assigned
Filed: Herewith

In the Claims:

Claims 1-10 (Cancelled).

11. (New) An image sensing structure comprising:
at least one photodiode comprising

a layer of a first conductivity type,
a well of a second conductivity type in
said layer, said well defining a collection node,
and

an isolation trench at least partially
bounding an upper portion of said well.

12. (New) An image sensing structure according to
Claim 11, wherein said isolation trench completely bounds the
upper portion of said well.

13. (New) An image sensing structure according to
Claim 11, wherein said isolation trench comprises a shallow
trench isolation (STI).

14. (New) An image sensing structure according to
Claim 11, wherein said well comprises an N-well.

15. (New) An image sensing structure according to
Claim 11, wherein said layer comprises a P-well.

16. (New) An image sensing structure according to
Claim 11, wherein said layer comprises a P-type epitaxial
layer.

17. (New) An image sensing structure according to

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Claim 11, wherein an upper surface of said at least one photodiode is substantially defined by said isolation trench.

18. (New) An image sensing structure according to Claim 16, wherein an n-p junction is formed at an interface between said isolation trench and said well.

19. (New) An image sensing structure according to Claim 11, wherein a width of said at least one photodiode is less than or equal to 10 micrometers.

20. (New) A CMOS image sensing structure comprising:

a semiconductor substrate; and
at least one photodiode in said semiconductor substrate and comprising
a layer of a P-type conductivity,
a well of an N-type conductivity type in said layer, said well defining a collection node,
and
an isolation trench at least partially bounding an upper portion of said well.

21. (New) An image sensing structure according to Claim 20, wherein said isolation trench completely bounds the upper portion of said well.

22. (New) An image sensing structure according to Claim 20, wherein said isolation trench comprises a shallow trench isolation (STI).

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23. (New) An image sensing structure according to Claim 20, wherein said layer comprises an epitaxial layer.

24. (New) An image sensing structure according to Claim 20, wherein an upper surface of said at least one photodiode is substantially defined by said isolation trench.

25. (New) An image sensing structure according to Claim 23, wherein an n-p junction is formed at an interface between said isolation trench and said well.

26. (New) An image sensing structure according to Claim 20, wherein a width of said at least one photodiode is less than or equal to 10 micrometers.

27. (New) A method for making an image sensing structure comprising:
forming at least one photodiode comprising
forming a layer of a first conductivity type,
forming an isolation trench in the layer,
and
forming a well of a second conductivity type in the layer, the well defining a collection node and being at least partially bounded by the isolation trench.

28. (New) A method according to Claim 27, wherein the isolation trench completely bounds the upper portion of the well.

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29. (New) A method according to Claim 27, wherein the isolation trench comprises a shallow trench isolation (STI).

30. (New) A method according to Claim 27, wherein the well comprises an N-well.

31. (New) A method according to Claim 27, wherein the layer comprises a P-well.

32. (New) A method according to Claim 27, wherein the layer comprises a P-type epitaxial layer.

33. (New) A method according to Claim 27, wherein an upper surface of the at least one photodiode is substantially defined by the isolation trench.

34. (New) A method according to Claim 32, wherein an n-p junction is formed at an interface between the isolation trench and the well.

35. (New) A method according to Claim 27, wherein a width of the at least one photodiode is less than or equal to 10 micrometers.